CLAIMS: *Please amend the claims according to the status designations in the following list,*

which contains all claims that were ever in the application, with the text of all active claims.

1. – 12. (CANCELED)

13. (NEW) A method for extracting binary age category information of a person from his or her

facial image, comprising the following steps of:

a) capturing a digital image of said person by at least one means for capturing images,

b) applying a face extraction process to extract a face region of said person from said digital

image,

c) processing said face region to extract face features, and

d) applying classification techniques to said face features obtained from said face region for

binary age category identification,

whereby said face region is the collection of digital image pixels that encompass the face of said

person in said digital image; and

whereby said face features are a representation of said face region as direct pixel information or

any representations obtained by transformation into other spaces by algebraic manipulation.

14. (NEW) The method according to claim 13, wherein the method further comprises a step of

processing the age category classification in real time,

whereby the step carries out the processing at the same rate as the rate of image capture.

15. (NEW) The method according to claim 13, wherein said step of processing said face region

to extract said face features further comprises a step of applying algebraic space transformations,

whereby said algebraic space transformations can comprise Principal Component Analysis, Non-negative Matrix Factorization or gray-scale values of the facial regions.

16. (NEW) The method according to claim 13, wherein the method further comprises a step of utilizing a plurality of classifiers for said binary age category identification,

whereby the classifiers can comprise any pattern classification techniques, including k-means clustering; and

whereby said plurality of classifiers differ from each other by any of the processes for extracting said face features or the steps for building a classifier or the training parameters of said classifier or a combination of the above said.

17. (NEW) The method according to claim 16, wherein the step of utilizing a plurality of classifiers further comprises a combination of two or more steps of:

a) collecting data,

b) training of the classifier using cross-validation,

c) bootstrapping to obtain the best classifier, and

d) testing the classifier.

18. (NEW) The method according to claim 16, wherein the method further comprises a step of arranging said plurality of classifiers in serial,

whereby the arrangement in serial can be any sequential ordering of the plurality of classifiers; and

whereby the errors from one classifier can be detected by the next classifier in the sequence, thus improving the accuracy of the classification.

19. (NEW) The method according to claim 18, wherein the ordering of the classifiers is done in such a way so that the initial classifiers handle coarse age classification and the later classifiers handle fine age classification.

20. (NEW) The method according to claim 16, wherein the method further comprises a step of arranging said plurality of classifiers in parallel,

whereby the errors from one classifier can be detected by the other classifiers in parallel, thus improving the accuracy of the classification.

21. (NEW) The method according to claim 16, wherein the method further comprises a step of arranging said plurality of classifiers in a combination of serial and parallel configurations.

22. (NEW) An apparatus for extracting binary age category information of a person from his or her facial image, comprising:

a) means for capturing a digital image of said person by at least one means for capturing images,

b) means for applying a face extraction process to extract a face region of said person from said digital image,

c) means for processing said face region to extract face features, and

d) means for applying classification techniques to said face features obtained from said face region for binary age category identification,

whereby said face region is the collection of digital image pixels that encompass the face of said person in said digital image;

whereby said face features are a representation of said face region as direct pixel information or any representations obtained by transformation into other spaces by algebraic manipulation;

whereby the means for capturing a digital image can comprise firewire or USB digital cameras; and

whereby the means for applying classification techniques can comprise one or multiple processors.

23. (NEW) The apparatus according to claim 22, wherein the apparatus further comprises means for processing the age category classification in real time,

whereby the system carries out the processing at the same rate as the rate of image capture.

24. (NEW) The apparatus according to claim 22, wherein said means for processing said face region to extract said face features further comprises means for applying algebraic space transformations,

whereby said algebraic space transformations can comprise Principal Component Analysis, Non-negative Matrix Factorization or gray-scale values of the facial regions.

25. (NEW) The apparatus according to claim 22, wherein the apparatus further comprises means

for utilizing a plurality of classifiers for said binary age category identification,

whereby the classifiers can comprise any pattern classification techniques, including k-means

clustering; and

whereby said plurality of classifiers differ from each other by any of the processes for extracting

said face features or the steps for building a classifier or the training parameters of said classifier

or a combination of the above said.

26. (NEW) The apparatus according to claim 25, wherein the means for utilizing a plurality of

classifiers further comprises means for utilizing a combination of two or more means for:

a) collecting data,

b) training of the classifier using cross-validation,

c) bootstrapping to obtain the best classifier, and

d) testing the classifier.

27. (NEW) The apparatus according to claim 25, wherein the apparatus further comprises means

for arranging said plurality of classifiers in serial,

whereby the arrangement in serial can be any sequential ordering of the plurality of classifiers;

and

whereby the errors from one classifier can be detected by the next classifier in the sequence, thus

improving the accuracy of the classification.

28. (NEW) The apparatus according to claim 27, wherein the ordering of the classifiers is done in such a way so that the initial classifiers handle coarse age classification and the later classifiers handle fine age classification.

29. (NEW) The apparatus according to claim 25, wherein the apparatus further comprises means for arranging said plurality of classifiers in parallel,

whereby the errors from one classifier can be detected by the other classifiers in parallel, thus improving the accuracy of the classification.

30. (NEW) The apparatus according to claim 25, wherein the apparatus further comprises means for arranging said plurality of classifiers in a combination of serial and parallel configurations.